REMARKS

Claims 1, 2, 4-6, 8, 10, 11, 13, 15, 16, 18-23, and 26 are pending in the present application. Claims 1 and 20 are in independent form. By this Amendment, Applicant cancels claims 3, 7, 9, 12, 14, 17, 24, and 25.

I. Claim Rejections under 35 U.S.C. §112(2nd):

The Examiner rejects claims 23, 24, and 26 because they recite terms lacking proper antecedent basis. Applicant appropriately amends claims 23 and 26 and cancels claim 24 to address all of the Examiner's concerns.

The amended claims are believed to more particularly point out and distinctly claim the subject matter regarded as the invention, thereby overcoming the raised §112(2nd) rejections.

II. Claim Rejection under 35 U.S.C. §112(1st):

The Examiner rejects claim 25 under 35 U.S.C. §112(1st) as containing subject matter which is not described in the specification in such a way as to enable one skilled in the art to make and use the invention. Although not explicitly stated, the Examiner's remarks (as understood by Applicant) seem to intimate a belief that the specification does not teach that the operation of the plant is simulated to evaluate the output (i.e., the "solution") of the genetic algorithm. Applicant respectfully disagrees.

As a preliminary matter, Applicant cancels claim 25, thereby rendering the raised rejection moot.

Notwithstanding, Applicant traverses the rejection as the Examiner might arguably apply it to independent claims 1 and 20, as amended, as they recite a feature of a simulation, somewhat similar to the one recited in claim 25. Claims 1 and 20 define a method that involves evaluating the solution (which is

determined by the genetic algorithm) *by simulating the operation of the continuous casting and rolling plant.* Contrary to the Examiner's allegations, an exemplary, non-limiting embodiment of this exact feature is thoroughly discussed in the specification, especially that portion describing Fig. 3.

In particular, and with reference to Fig. 3, the specification indicates that a starting solution (from block 22) is evaluated (at block 23) via an event-oriented evaluation.[1] The evaluation involves simulating "the operation of the thin-slab continuous casting and rolling plant 1 ... using the values of the starting solution."[2] That is, the events that would occur during an actual operation of the plant (based on the starting solution) are simulated to obtain simulation results.[3] The simulation results are evaluated (at block 24) based on a number of criteria.[4]

If the simulation results are not acceptable, then the method is continued and a genetic algorithm is applied to the individual values of the starting solution.[5] The application of the genetic algorithm produces a new solution.[6] The new solution is fed back to block 23 to be evaluated using the same simulation technique discussed above.[7]

In view of the description of Fig. 3, Applicant respectfully submits that a skilled artisan could practice the invention defined by claims 1 and 20 (noting that claims 1 and 20, while supported by Fig. 3, are not limited thereto).

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[1] Spec., p. 13, l. 4-7.
[2] Spec., p. 13, l. 7-11.
[3] Spec., p. 13, l. 25-30.
[4] Spec., p. 14, l. 12 – p. 15, l. 12.
[5] Spec., p. 15, l. 22 – p. 16, l. 10.
[6] Spec., p. 17, l. 8-10.
[7] Spec., p. 17, l. 10-11.

III. Claim Rejections under 35 U.S.C. §103:

The Examiner continues to reject claims 1-22 under 35 U.S.C. §103(a) as being obvious over U.S. 5,808,891 to Lee et al. ("Lee") in view of U.S. 5,222,192 to Shaefer ("Shaefer"). Applicant respectfully traverses this rejection in view of the following remarks.

As a preliminary matter, Applicant cancels claims 3, 7, 9, 12, 14, 17, 24, and 25, thereby rending the rejection of these claims moot.

A. The Previous Arguments are Still Valid:

The alleged combination of references is incorrect for essentially the same reasons indicated in the August 13, 2003 Amendment. In brief, those skilled in the art would not have been motivated to combine the references in the manner suggested by the Examiner. This is because neither reference teaches that a genetic algorithm may be used in conjunction with a continuous rolling and casting plant. And without such a teaching, the alleged combination appears to be based on an impermissible hindsight of the present application.

Not persuaded, the Examiner counters (at numbered paragraph one of the Office Action) that one skilled in the art looking to solve scheduling problems using a computer would have found it obvious to look to genetic algorithms to come up with the best schedule. The Examiner also cites U.S. 5,404,516 to Georgiades et al. ("Georgiades") for support. Applicant still disagrees.

B. The Articulated Motivation is Overly Broad:

Recent Federal Circuit case law holds that the suggestion to modify/combine the prior art must be "clear and particular."[8] In the situation at hand, however, the articulated motivation is overly broad. It amounts to

[8] *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1348 (Fed. Cir. 2000).

nothing more than a general allegation that genetic algorithms may be used to allocate resources in some unique applications. For example, Applicant wholeheartedly agrees that Georgiades teaches that a genetic algorithm may be used to generate asset schedules in time critical (e.g., military) applications. But the prior art (inclusive of Georgiades and the other references cited by the Examiner) does not teach or suggest that a genetic algorithm may be used in a continuous rolling and casting plant.

The only suggestion for combining a genetic algorithm and a continuous rolling and casting plant stems from hindsight knowledge derived from the present disclosure. In this regard, the rejection grounds seem to incorrectly dissect the claims into discrete components and then apply individual pieces of prior art. That is the hallmark of hindsight and not the characteristics of obviousness.

C. The Evaluation Feature:

Independent claims 1 and 20, which are amended, recite (among other things):

> *evaluating the solution by an event-oriented evaluation, wherein the event-oriented evaluation is carried out by simulating the operation of the continuous casting and rolling plant.*

An exemplary embodiment of this feature is discussed in section II above. Also see Fig. 3 and the portion of the specification spanning page 11, line 12 – page 17, line 16. At least the "evaluating" feature (as claimed in claims 1 and 20), in combination with the other limitations recited in claims 1 and 20, is not taught or suggested by the prior art relied upon by the rejection grounds.

More specifically, none of the references applied by the rejection grounds teach or suggest that a solution from the genetic algorithm is evaluated via a simulation, much less a simulation of the operation of a continuous casting

and rolling plant. Consider Shaefer for example. This reference merely indicates that an "analysis of the quality of the estimated solutions" is carried out based on information such as statistical properties.[9] Shaefer's disclosure in this regard is far too abstract to teach the specific "evaluation" technique defined by claims 1 and 20.

Furthermore, all of Shaefer's disclosed examples refer to statistical or mathematical problems, such as the traveling salesman problem or a function problem. These problems and the evaluation technique disclosed by Shaefer are simply not pertinent to evaluating a genetic algorithm solution by simulating processes in the operation of a basic industry plant.

Applicant respectfully submits none of the other references (i.e., Georgiades, Kim, and Hughes) cited as teaching genetic algorithms are any more pertinent than Shaefer.

In summary, the applied prior art references (taken alone or in combination) do not teach or suggest evaluating a solution from a genetic algorithm by simulating the operation of the continuous casting and rolling plant. Consequently, even if combined in the manner suggested by the Examiner, the prior art would still not meet all of the limitations of claims 1 and 20.

CONCLUSION

In view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims in connection with the present application are earnestly solicited.

[9] Shaefer, col. 8, l. 60-68.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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